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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/756,767 | 01/14/2004 | Motoki Kyo | 032084 | 1737 |

38834 7590 08/29/2008

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| EXAMINER | |
|---|---|
| CROW, ROBERT THOMAS | |
| ART UNIT | PAPER NUMBER |
| 1634 | |
| MAIL DATE | DELIVERY MODE |
| 08/29/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/756,767 | KYO ET AL. | |
| | Examiner | Art Unit | |
| | Robert T. Crow | 1634 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *05 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *17,20-22,24-27,29-31 and 33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,20-22,24-27,29-31 and 33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/29/08-replacement*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

**FINAL ACTION**

***Status of the Claims***

1. This action is in response to papers filed 5 June 2008 in which claim 17 was amended, claims 1-16 and 34-42 were canceled, and no new claims were added. All of the amendments have been thoroughly reviewed and entered.

The previous rejections under 35 U.S.C. 112, second paragraph, are withdrawn in view of the amendments.

The previous rejections under 35 U.S.C. 103(a) are maintained. Applicant's arguments have been thoroughly reviewed and are addressed following the rejections necessitated by the amendments.

Claims 17, 20-22, 24-27, 29-31, and 33 are under prosecution.

***Information Disclosure Statement***

2. The Information Disclosure Statement filed 29 February 2008 was acknowledged in the previous Office Action. In view of Applicant's arguments on page 7 of the Remarks filed 5 June 2008, documents JP 2002-333446 and JP 4-501605 initialed because they correspond to the cited English language documents. However, as noted in the previous Office Action, the Japanese Office Actions have not been considered because there is no publication date and are not in English. See 37 CFR 1.98.

3. A Replacement copy of the signed Information Disclosure Statement filed 29 February 2008 is provided with this Office Action.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. It is noted that a prior art reference is considered as a whole and for all it stands for. Thus, while the rejections listed below present a modified interpretation of the teachings of Andreadis et al solely for the purpose of clarity, the rejections of the claims are maintained for the reasons of record. Thus, the claims are still obvious over Corn et al in view of Andreadis et al as discussed below.

7. Claims 17, 21-22, 24-27, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corn et al (U.S. Patent No. 6,127,129, issued 3 October 2000) in view of Andreadis et al (Nucleic Acids Research, vol. 28, e5, January 2000).

Regarding claim 17, Corn et al teach a biomolecule interaction measuring method. In a single exemplary embodiment, Corn et al teach providing a double-stranded oligonucleotide array comprising a background region on which a hydrophilic polymer molecule is immobilized and a region on which a plurality of double-stranded oligonucleotides are immobilized on a metal substrate; namely, Figure 1, wherein PEG is the hydrophilic polymer (column 10, lines 27-28) on the background region, the substrate is gold, and the attached DNA is double stranded (column 12, Example 1). Corn et al further teach measuring the interaction between said double-stranded oligonucleotides and a biomolecule or aggregate thereof; namely, SPR (i.e., surface plasmon resonance) imaging measurements are taken of the binding of single-stranded DNA binding protein to an array of double-stranded DNA sequences (figure 5 and Example 1). Corn et al further teach each of said plurality of double-stranded oligonucleotide include a first single-stranded oligonucleotide and a second single-stranded oligonucleotide, said first and second single-stranded oligonucleotides being entirely or partially bonded together in a complementary manner to form said double-stranded oligonucleotide; namely, the array has double stranded DNA sequences (Example 1). Corn et al also teach only said first single-stranded oligonucleotide is bonded to said substrate; namely, Figure 5, wherein the double-stranded DNA is

prepared by immobilizing an oligonucleotide (e.g., D2) and hybridizing the complement to the sequence (column 13, lines 7-28).

Corn et al also teach the first single stranded thiolated oligonucleotide is bonded to said substrate by use of a heterobifunctional molecule in the form SSMCC, which binds to the amino group of MUAM (column 8, line 65-column 7, line 20 and Figure 4).

Corn et al do not teach a hydrophilic repeating unit (expressed by –(O-R1)n, wherein R1 is an alkylene group of the polymer (i.e., polyethylene glycol, or PEG). Thus, Corn et al teach a base method that differs from the instantly claimed method because Corn et al does not teach a heterobifunctional linker wherein the X group and the Y group linked with a polyethylene glycol portion is linked to the MUAM.

However, Andreadis et al teach the immobilization of thiolated oligonucleotides to solid surfaces (e.g., beads), wherein the oligonucleotides are immobilized using the heterobifunctional linker NHS-PEG-MAL, which has a functional group X in the form of an NHS (i.e., succinimidyl) group and a functional group Y in the form of a MAL (i.e., maleimide) group and a hydrophilic repeating polymer in the form of polyethylene glycol (page iii, column 1, first full paragraph). The NHS-PEG-MAL has a molecular weight of 2000, and thus has between 4 and 450 repeating OR (i.e., ethylene glycol) and is hydrophilic. The NHS-PEG-Mal molecules bind to the aminated surface (i.e., of the beads), and the thiolated DNA binds to the maleimide portion (page iv, column 2, first full paragraph). Andreadis et al also teach the NHS-PEG MAL linkers have the added advantage of allowing the immobilized DNA molecules to be fully competent for

transcription and translation reactions (Abstract). Thus, Andreadis et al teach the known technique of using polyethylene glycol linkers in nucleic acid arrays.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the method comprising heterobifunctional linkers as taught by Corn et al by substituting the specific heterobifunctional linker NHS-PEG-MAL as taught by Andreadis et al in place of the SSMCC linker of Corn et al to arrive at the instantly claimed invention with a reasonable expectation of success. The amino terminus of the MUAM of Corn et al would bind to the NHS group on the linker of Andreadis et al, and the MAL group on the ethylene glycol based linker of Andreadis et al, which is hydrophilic, binds to the thiolated DNA of Corn et al. The ordinary artisan would have been motivated to make such a modification because said modification would have resulted in a method having the added advantage of allowing the immobilized DNA molecules to be fully competent for transcription and translation reactions as explicitly taught by Andreadis et al (Abstract). In addition, it would have been obvious to the ordinary artisan that the known technique of using the NHS-PEG-MAL linkers of Andreadis et al could have been applied to the substrate of Corn et al with predictable results because the NHS-PEG-MAL linkers of Andreadis et al predictably result in linkers suitable for attaching oligonucleotides to substrates.

Regarding claims 21-22, 24-27, and 29-30, Corn et al teach a biomolecule interaction measuring method. In a single exemplary embodiment, Corn et al teach measuring the interaction between a first biomolecule and a second biomolecule or an

aggregate thereof in the form of taking SPR (i.e., surface plasmon resonance) imaging measurements of the binding of single-stranded DNA binding protein to an array of single-stranded and double-stranded DNA sequences (i.e., claim 27; Figure 5 and Example 1). Corn et al also teach use of a solid substrate with a solid surface comprising a background region on which a hydrophilic polymer molecule is immobilized other than the area; namely, Figure 1, wherein PEG is the hydrophilic polymer (column 10, lines 27-28) on the background region, and the PEG is not on the other areas of the substrate. The substrate also has a region on which said first biomolecule is immobilized; namely, DNA is immobilized on areas other than those where the PEG is immobilized (Figure 1).

Corn et al further teach the method wherein said substrate includes plural kinds of first biomolecules arranged thereon in an array arrangement; namely, Figure 1 and Example 1, wherein Example 1 has two different DNA sequences immobilized on a checkerboard surface (i.e., claim 26; column 12, lines 45-55).

Corn et al also teach the method wherein the interaction between said first biomolecule and said second biomolecule or aggregate thereof is measured through surface plasmon resonance imaging (i.e., claim 29; Figure 6; column 5, lines 40-50), and wherein said second biomolecule is a protein; namely, single-stranded DNA binding protein (i.e., claim 30; Example 1).

Corn et al also teach the first single stranded thiolated oligonucleotide is bonded to said substrate by use of a heterobifunctional molecule in the form SSMCC, which binds to the amino group of MUAM (column 8, line 65-column 7, line 20 and Figure 4).

MUAM is a compound X'-R'-Y', wherein X is a thiol bound to a thin gold layer on the substrate, R is an organic group in the form of 11 CH2 groups, and Y is an amino group that binds to SSMCC (i.e., claim 25; Figures 1 and 4).

Corn et al do not teach a hydrophilic repeating unit (expressed by –(O-R1)n, wherein R1 is an alkylene group of the polymer repeated 4 to 450 times (i.e., polyethylene glycol, or PEG; claim 21) having a molecular weight of 200 to 20000 (i.e., claim 22) or the X and Y groups of claim 24 in a PEG chain.

However, Andreadis et al teach the immobilization of thiolated oligonucleotides to solid surfaces (e.g., beads), wherein the oligonucleotides are immobilized using the heterobifunctional linker NHS-PEG-MAL, which has a functional group X in the form of an NHS (i.e., succinimidyl) group and a functional group Y in the form of a MAL (i.e., maleimide) group (i.e., claim 24) and a hydrophilic repeating polymer in the form of polyethylene glycol (page iii, column 1, first full paragraph). The NHS-PEG-MAL has a molecular weight of 2000, and thus has between 4 and 450 repeating OR (i.e., ethylene glycol) units (i.e., claims 21-22) and is hydrophilic. The NHS-PEG-MAL molecules bind to the aminated surface (i.e., of the beads), and the thiolated DNA binds to the maleimide portion (page iv, column 2, first full paragraph). Andreadis et al also teach the NHS-PEG MAL linkers have the added advantage of allowing the immobilized DNA molecules to be fully competent for transcription and translation reactions (Abstract). Thus, Andreadis et al teach the known technique of using polyethylene glycol linkers in nucleic acid arrays.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the method comprising heterobifunctional linkers as taught by Corn et al by substituting the specific heterobifunctional linker NHS-PEG-MAL as taught by Andreadis et al in place of the SSMCC linker of Corn et al to arrive at the instantly claimed invention with a reasonable expectation of success. The amino terminus of the MUAM (i.e., claim 25) of Corn et al would bind to the NHS group on the linker of Andreadis et al, and the MAL group on the ethylene glycol based linker of Andreadis et al, which is hydrophilic, binds to the thiolated DNA of Corn et al. The linker has a molecular weight of 200 to 2000 (i.e., claim 22), an n value of 2-10 ethylene glycol units (i.e., claim 21), and succinimidyl and maleimidyl groups as X and Y (i.e., claims 21 and 24). The ordinary artisan would have been motivated to make such a modification because said modification would have resulted in a method having the added advantage of allowing the immobilized DNA molecules to be fully competent for transcription and translation reactions as explicitly taught by Andreadis et al (Abstract). In addition, it would have been obvious to the ordinary artisan that the known technique of using the NHS-PEG-MAL linkers of Andreadis et al could have been applied to the substrate of Corn et al with predictable results because the NHS-PEG-MAL linkers of Andreadis et al predictably result in linkers suitable for attaching oligonucleotides to substrates

8. Claims 20 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corn et al (U.S. Patent No. 6,127,129, issued 3 October 2000) in view of Andreadis et al (Nucleic Acids Research, vol. 28, e5, January 2000) as applied to claims 17 and 30 above, and further in view of Noblett (U.S. Patent No. 6,362,004 B1, issued 26 March 2002).

Regarding claims 20 and 33, the method of claim 17 and 30 are discussed above in Section 7.

Neither Corn et al nor Andreadis et al teach markers on the array indicative of spots. Thus, Corn et al in view of Andreadis et al teach a base method that differs from the instantly claimed method because Corn et al in view of Andreadis et al does not teach markers on the array indicative of spots.

However, Noblett et al teach the use of microarrays comprising immobilized nucleic acids (column 1, lines 20-30) having marks indicative of spots (i.e., fiducials, Abstract) with the added advantage of allowing positioning and alignment of the substrate for spot analysis and comparison procedures (Abstract). Thus, Noblett teaches the known technique of using markers on the array indicative of spots.

It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified the method as taught by Corn et al in view of Andreadis et al with the fiducials as taught by Noblett with a reasonable expectation of success. The ordinary artisan would have been motivated to make such a modification because the modification would have resulted in a method having the added advantage of allowing positioning and alignment of the substrate for spot

analysis and comparison procedures as explicitly taught by Noblett (Abstract). In addition, it would have been obvious to the ordinary artisan that the known technique of using the markers of Noblett could have been applied to the substrate of Corn et al in view of Andreadis et al with predictable results because the markers of Noblett predictably result in indicators of spots suitable for use with nucleic acid arrays.

9. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Corn et al (U.S. Patent No. 6,127,129, issued 3 October 2000) in view of Andreadis et al (Nucleic Acids Research, vol. 28, e5, January 2000) as applied to claim 30 above, and further in view in view of Wiegel (U.S. Patent No. 6,107,034, issued 22 August 2000).

Regarding claim 31, the method of claim 30 is discussed above in Section 7.

Corn et al do not teach markers indicative of spots. While Corn et al also teach the second biomolecule is a protein in the form of single-stranded DNA binding protein (Example 1), Corn et al do not specifically teach transfer factors. Thus, Corn et al in view of Andreadis et al teach a base method that differs from the instantly claimed method because Corn et al in view of Andreadis et al does not teach transfer factors.

However, Wiegel teaches the detection of binding of a transfer factor to nucleic acids (e.g., GATA-3 binding to the DNA motif recognized by the protein; column 3, lines 52-63) and the use of nucleic acid arrays (column 6, lines 3-14) with the added benefit that detection of the transfer factor GATA-3 provides a diagnostic test for a hormone responsive tumor (Abstract). Thus, Wiegel teaches the known technique of using transfer factors.

It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was claimed to have modified the method comprising detection of protein binding as taught by Corn et al in view of Andreadis et al with the transfer factor protein GATA as taught by Wiegel et al with a reasonable expectation of success. The ordinary artisan would have been motivated to make such a modification because the modification would have resulted in a method having the added advantage of providing a diagnostic test for a hormone responsive tumor as explicitly taught by Wiegel (Abstract). In addition, it would have been obvious to the ordinary artisan that the known technique of using the transfer factors of Wiegel could have been applied to the substrate of Corn et al in view of Andreadis et al with predictable results because the transfer factors of Wiegel predictably bind to nucleic acids.

***Response to Arguments***

10. Applicant's arguments filed 5 June 2008 (i.e., the "Remarks") have been fully considered but they are not persuasive for the reason(s) listed below.

A. Applicant argues on pages 8-9 of the Remarks that Andreadis et al teach immobilization to silanized beads and not a planar surface as in Corn et al.

In response to applicant's apparent argument that Andreadis et al is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443

(Fed. Cir. 1992). In this case, both Andreadis et al and Corn et al teach the immobilization of DNA to solid surfaces. Thus, the prior art references are clearly in the field of applicant's endeavor and reasonably pertinent to the particular problem with which the applicant was concerned.

In addition, as detailed in the rejections presented above, Andreadis et al is merely relied upon for the specific linker used to immobilize the DNA, not for a specific type of surface.

B. Applicant argues on pages 9-10 of the Remarks that Andreadis et al teach away from the advantage of allowing PCR reactions to be used with the NHS-PEG-MAL linkers.

However, as noted above, a prior art reference is considered as a whole and for all it stands for. Andreadis et al clearly teach that "Table 1 summarized the various combinations of primers, attachment chemistries and beads or polymeric supports which were used in this study (page iv, second column, first full paragraph)." Table 1 on page ii clearly shows the NHS-PEG-MAL crosslinker (E-PEG and H-PEG). As noted above, the Abstract of Andreadis et al clearly teaches all of the immobilized DNA templates (i.e., including the NHS-PEG MAL linkers of Table 1) have the added advantage of allowing the immobilized DNA molecules to be fully competent for transcription and translation reactions (Abstract). Thus, Andreadis et al teach a clear advantage of using the NHS-PEG MAL linkers of Table 1.

In addition, it is also noted that under the Supreme Court ruling for *KSR Int'l Co. v. Teleflex, Inc* (No 04-1350 (US 30 April 2007) forecloses the argument that a **specific**

teaching, suggestion, or motivation is required to support a finding of obviousness. See *Ex parte Smith* (USPQ2d, slip op. at 20 (Bd. Pat. App. & Interf. June 25, 2007). Thus, as detailed in the rejections above and in the rejections of the previous Office Action, it would have been obvious to the ordinary artisan that the known technique of using the NHS-PEG-MAL linkers of Andreadis et al could have been applied to the substrate of Corn et al with predictable results because the NHS-PEG-MAL linkers of Andreadis et al predictably result in linkers suitable for attaching oligonucleotides to substrates.

C. Applicant further argues on page 11 of the Remarks that Andreadis et al teach away from the NHS-PEG-MAL linkers because they have lower immobilization efficiencies that SIAB linkers, as detailed in Table 2.

However, it is noted that Andreadis et al also specifically teach beads with H-PEG "consistently yielded higher quantities of covalently attached DNA (page v, column 1, middle of the first paragraph)." In addition, Table 2 shows that both H-PEG and E-PEG are superior to the T-CPG and P-PS immobilization chemistries, and the H-PEG is further superior to the T-PS and P-CPG immobilization chemistries.

Further, as noted above, the Abstract of Andreadis et al clearly teaches all of the immobilized DNA templates (i.e., including the NHS-PEG MAL linkers of Table 1) have the added advantage of allowing the immobilized DNA molecules to be fully competent for transcription and translation reactions (Abstract). Thus, Andreadis et al teach a clear advantage of using the NHS-PEG MAL linkers of Table 1.

In addition, it is noted that a review of Andreadis et al yields not explicit teaching that the NHS-PEG-MAL render the immobilized nucleic acids inoperable or otherwise unusable in any method.

Thus, Applicant's arguments that Andreadis et al teach away from the NHS-PEG-MAL linkers are not persuasive.

D. Applicant argues on pages 11-12 of the Remarks that the configuration of Kyo et al shows an unexpected result for the heterobifunctional linker NHS-PEG-MAL.

However, as noted in the previous Office Action, Applicant's argument is not persuasive because a single data point (i.e., the NHS PEG MAL linker of Kyo et al) hardly describes "trend in exemplified data;" i.e., one data point is not a trend.

In addition, MPEP 716.02(d)-I specifically addresses *In re Kollman*, and explicitly states that "[t]he court held that the limited number of species exemplified [i.e., three] did not provide an adequate basis for concluding that similar results would be obtained for the other diphenyl ether herbicides within the scope of the generic claims." Thus, because Applicant has presented only one example having the alleged unexpected results, adequate basis for concluding that similar results would be obtained has clearly not been established.

As also previously noted, the specific example in Kyo et al requires other specific structural limitations not listed in the instant claims; namely, a PEG thiol background, and 8-AOT on the Spot Region (Figure 2 of Kyo et al). None of these limitations are required by the instant claims.

E. Applicant further argues on pages 12-13 of the Remarks that the newly submitted reference of Nishimura et al offers additional support for the alleged unexpected results. Applicant cites note 20 on page 2162 of the Nishimura et al reference for "an additional "data point" representing another heterobifunctional linker…" in the form of NHS-PEG12-MAL.

However, it is noted that note 20 of Nishimura et al does not indicate any benefit whatsoever in using the NHS-PEG12-MAL, nor does note 20 of Nishimura et al compare NHS-PEG12-MAL to any other linker, nor does note 20 of Nishimura et al compare NHS-PEG12-MAL even indicate that the SPR results are superior to any other method or linker. Thus, note 20 does not show any evidence of unexpected results.

In addition, the examiner disagrees that the single additional "data point" in Nishimura et al is sufficient to establish a trend in the exemplified data that would allow the artisan to reasonable extend the probative value thereof, nonobviousness of a broader claimed range can be supported, based on *In re Kollman*.

Specifically, claim 17 is broadly drawn to the linker X-R-Y, wherein X and Y are different functional groups, and R is an OR1 group repeated 4 to 450 times. Claim 17 has no specific requirements for the functional groups, and R1 has not specific limitation on lengths. Thus, even in the generic linker where R1 is CH2CH2, claim 17 encompasses at least 447 different linkers (i.e., from 4 to 450 OCH2CH2 groups) that do not even address the nature of X and Y. Further, in the specific example of claim 24, none of the linkers wherein X or Y is an amino, carboxy, thiol, aldehyde, vinyl, isocyanate, epoxy, hydrazine, or azido group are encompassed by the two data points

provided by Kyo et al and Nishimura et al. Therefore, Applicant's two submitted data points in no way encompass the enormous scope of any of the instant claims.

In addition, it is also noted that note 20 of Nishimura also requires each of the following for the SPR array:

I. A gold coated chip.

II. Amino groups on the chip.

III. A 60 minute reaction to attach NHS-PEG12-MAL.

IV. Thiol terminated RNA.

V. Automated spotting.

VI. An overnight reaction to link the RNA.

VI. A specific HEPES running buffer.

VI. A rinsing step before SPR imaging.

None of the instant claims require all of the above. Thus, the method of note 20 is not commensurate in scope with the any of instant claims.

Finally, in reference to the submission of the art of Nishimura et al, it is noted that while the reference has been considered, the reference has not been entered into the record because the reference has not been submitted with an Information Disclosure Citation form PTO-1449.

F. Applicant argues on page 13 of the Remarks that the PEG thiol backgrounds and the use of 8-AOT were well known in the art, and thus no discussion was needed in reference to Kyo et al.

However, Applicant cited Kyo et al in an effort to illustrate unexpected results. The data presented in Kyo required a chip comprising the PEG thiol background and 8-AOT to achieve the alleged unexpected results of the claimed method. Because the alleged unexpected results occurred in the method performed in the Kyo et al reference, the method in Kyo et al must be considered in its entirety in view of the requirement that "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support" as detailed in MPEP 716.02(d).

G. Applicant argues on page 13 of the Remarks that previous Office actions regarded MUAM as taught by Corn et al as part of the linker, rather than part of the surface.

However, it is noted that the instant rejections are based on the instant claims and meet all of the limitations required by the instant claims. Thus, Applicant's argument that claim 25 as allowable as a result of its dependency on claim 21 is not persuasive because claim 21 is not allowable for the reasons detailed above.

11. Applicant's remaining arguments ion pages 14-15 of the Remarks rely on the arguments regarding the alleged deficiencies of Corn et al in view of Andreadis et al. These arguments are addressed above. Because the arguments regarding the alleged deficiencies of Corn et al in view of Andreadis et al were not persuasive, the rejections of the remaining claims are maintained.

***Conclusion***

12. No claim is allowed.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

14. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert T. Crow whose telephone number is (571)272-1113. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert T. Crow/
Examiner, Art Unit 1634

/Diana B. Johannsen/
Primary Examiner, Art Unit 1634

Robert T. Crow
Examiner
Art Unit 1634